

Capt Dillon

FRANBY

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AN
 ESSAY
 ON THE
 EXTINCTION AND PREVENTION
 OF
 DESTRUCTIVE FIRES,
 WITH THE DESCRIPTION OF
 APPARATUS FOR RESCUING PERSONS FROM HOUSES
 ENVELOPED IN FLAMES;
 TOGETHER WITH AN
 OUTLINE FOR THE ESTABLISHMENT OF A
 PREVENTIVE FIRE-POLICE,
 &c. &c.

BY
 GEORGE WILLIAM MANBY,

CAPTAIN, BARRACK MASTER OF GREAT YARMOUTH,

Author of "The most efficacious Means for Preserving the Lives of Sailors from Stranded Vessels,
 the Prevention of Shipwreck, and for saving Persons from Drowning
 who break through the Ice, &c. &c."

— "Subsidia reprimendis ignibus in propatulo quisque haberet."—TACIT. *Ann.* xv.

LONDON:

PRINTED BY WILLIAM CLOWES, STAMFORD-STREET.

MDCCCXXX.



TO

HIS ROYAL HIGHNESS THE DUKE OF SUSSEX,

&c. &c. &c.

SIR,

In soliciting at the hands of your Royal Highness permission to dedicate to you the following pages, it was impossible I should do otherwise than feel, that no individual in the kingdom was equally able to give effect to the object of them, as well from the exalted station of your Royal Highness, as from your filling the Chair as President of the Society of Arts, &c.; and, above all, from the interest which your Royal Highness has always so conspicuously taken in what refers to the comfort or the benefit of the country. I hope, also, I am not mistaken in saying, that the peculiar character of the present times is singularly calculated to give importance to the subject to which this small publication relates; and, with that view, I most humbly and dutifully lay it at your Royal Highness's feet.

I have the honour to be

Your Royal Highness's

Most obedient, humble Servant,

G. W. MANBY.

Nov. 24, 1830.



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INTRODUCTION.

AFTER perfecting and seeing generally established my plan for “*Saving the Lives of Mariners Wrecked on Lee-Shores*,” I had leisure to turn my attention to a subject no less interesting to humanity, namely, the ready means of averting the calamity of Fire, and its awful and disastrous concomitants,—the loss of lives, and the destruction of extensive and valuable property; and I conceived that, at my advanced period of life, I could not better employ my thoughts than in directing them to a consideration of such universal importance, and bringing them before the public.

Having brought my plans, practically, to bear, I need not, with the view of impressing the advantage of their adoption, draw a picture of the heart-rending and ruinous consequences of a house wrapped in flames,—the agony of decrepit and bewildered old age,—the shrieks of helpless children,—the terrors attendant on the sudden rousing from rest by the appalling alarm of fire in the dead of night,—the horror of the spectators, compelled too often to be merely passive lookers-on, for want of some immediate and efficient aid;—this is an outline that may at once be filled up by every one’s own fears or experience. Nor, in a public point of view, is the value of a well-arranged plan less obvious, which has for its immediate object the preservation of Dock-yards from incendiaries, the safety of large public buildings, of vessels of war, and, in a word, of property of every description. Any attempt to effectuate so laudable a design, and to check the complication of human suffering just hinted at, especially in large and crowded cities, can require no apology, but may well be deemed worthy of attention, both individually and nationally.

AN ESSAY,

&c. &c.

ALTHOUGH the preservation of life from fire had for a long time occupied some part of my attention, it was not till after witnessing a very awful conflagration in Edinburgh, in January, 1813, and after reflecting on the strange confusion which is invariably attendant on fires, from the want of some established, well-digested, systematic plan, that I began more particularly to direct my thoughts to the subject: convinced of the necessity of laying down some general rules, in conjunction with the requisite apparatus, for the purpose I had in view, much after the order I had already adopted for saving the lives of shipwrecked mariners.

The fire to which I allude was raging in the fifth floor, or flat, of a lofty building; and in consequence of the difficulty of procuring an early supply of water,—of its scarcity when obtained, and of the height of the building, by which the use of the engines was rendered of little avail, the fire rapidly increased. Owing to the intricacy of the situation, which rendered access difficult, and to the spot, when attained, not being within reach of manual exertion for the ready application of water on the part that was burning, the flames at last raged with unchecked fury.

On my return from Scotland, I stated these circumstances to the late Right Hon. George Rose, that true friend and patron of every good design. He urged me to apply myself to the production of some means for obviating the evils represented, and to the construction of apparatus, &c., for preventing a recurrence of similar disasters. Thus encouraged, after deep consideration, it occurred to me that nothing could be so equably adapted for instant application as condensed air, acting on the surface of a fluid so as to jet a stream of water, at pleasure, on any part of a building where fire existed. This appeared to me in every way adequate to the purpose, as it was capable of being rendered extremely portable, and, consequently, easy

of conveyance to any spot that might be in flames, however difficult of access or remote the situation.

Although emboldened by the promise of success, a difficulty arose, that only a small portion could be thus conveyed; yet I felt fully persuaded, that the application of even a small portion of water at a critical moment would often effect what, at a later period, a much larger power of water could not accomplish. I accordingly prepared a model of my invention, and showed it to Mr. Rose, whose approbation was accompanied with a recommendation of it to Lord Sidmouth, then Secretary of State for the Home Department. With it I also submitted other designs for the saving of lives from houses on fire, by elastic safety sheets, for the preservation of persons who might leap from windows, parapets, or battlements, and which were suggested by me as proper to accompany every fire-engine;—all these met with his Lordship's approbation. I will now enter upon the remedial part of my plan for extinguishing **INCIPIENT FIRES**, leaving the more detailed description of the apparatus, &c. for a subsequent page.

APPARATUS AND APPLICATION OF THE ANTIPHLOGISTIC FLUID.

Early in the spring of 1816 an experiment was tried by me in London at the express wish of some persons who had taken a favourable view of my plan and of its practicability.

My apparatus was as follows:—A portable chest, containing four charged cylindrical engines or vessels, and the same number of reservoirs, also filled with the solution of an ingredient calculated to extinguish fire immediately on being cast upon it—the fluid, or solution, not being liable to freeze, and possessing, at the same time, the property of preventing the re-ignition of whatever it had once extinguished.

Finding a chest inconvenient, the above apparatus is now mounted on a cart, so light, that a person can wheel it with rapidity to the required spot. The vessels, too, combine the means of projecting the fluid with force at pleasure; are portable, and, when slung across the shoulders, may be carried up a ladder, or to any part of the building on fire, however difficult of access. The design of this apparatus, charged as above with the Antiphlogistic Fluid, was to keep up a constant

play, so as, if early applied, to subdue the fire, or at least check its progress, until the arrival of the regular engines.

An account of this experiment having been reported in the public journals, and commented on by a distinguished naval officer present, (the Hon. Captain Pellew,) with reference to the importance of such an apparatus on board of SHIPS for the extinction of fire in situations below, where water is not easy of conveyance, and still more difficult of application, I was applied to, by the minister of the French marine, through the medium of Baron SEGUIER, the consul-general of that nation, then residing in London, requesting me to explain the nature of my invention.

My ready communication of the plan, and equal willingness, in accordance with the request, to make experiments for illustrating its efficacy before the Marquis d'Osmond, the ambassador in this country, obtained for me not only the thanks of that minister, but those of the French marine. The letters on this subject I have now in my possession.

EXPERIMENT WITH THE ANTIPHLOGISTIC FLUID.

In this country, the admirers of my plan, in the confidence of its utility, urged me to apply to the Board of Ordnance for leave to make an experiment at Woolwich, on an extended scale, to bring to a practical bearing the particular fitness of the apparatus, &c. for extinguishing fire on board SHIPS, in DOCK-YARDS, and in STORE-HOUSES.

In asking for this permission, I stated, that my design was to exhibit the feasibility of my scheme, and its efficiency in extinguishing INCIPIENT FIRES on their first discovery, which would be within the compass of the apparatus; or, provided the conflagration had already extended beyond that limit, to check its progress, until the arrival of more powerful assistance.

My request was readily granted, and the experiment took place at the Practice-ground on the 24th of March, 1817, upon a wooden building erected for the purpose, by the side of the Moat. This building was filled with bavins, broken tar-barrels, and other combustibles, resting upon rafters, about four feet from the ground.

The experiment excited considerable interest, particularly among those at whose instigation I consented to perform it; and many persons attended to witness the result.

Let it be borne in mind, that a fire, however combustible the material, commences only in one particular spot; and thus, for some time existing but locally, it may consequently, by prompt application, be checked, or quite extinguished; but in firing the contents of the building in this instance, so greatly was the whole previous arrangement departed from, by several men with port-fires setting fire to every part under the rafters, that the whole, in an instant, was in such a raging state of combustion, as to bid defiance to the most powerful engine. Indeed, many of the by-standers, to express their dissatisfaction at my apparent extravagance, advised me to abandon my project. Yet, disregarding the wishes of my friends, I persevered, and, to show the correctness of my expectation, I present the following extract from the Report drawn up on the occasion :

“ The flames were uniformly extinguished where the liquid could be applied ; and the wood did not appear capable of being readily re-inflamed.”*

In the year 1821 an alarming fire took place in the metropolis, which, from the delay of the engines getting to the spot, the time lost before they were brought to play, from the scarcity of water, and other circumstances—became frightfully destructive.

The accounts of this, as collected from the periodical press, determined me on calling the attention of the public to my newly-invented method of arresting the progress of incipient fires, or of subduing them altogether. Accordingly, in the following year (1822) I put the public in full possession of my plans, through the medium of the Gentleman's Magazine, with an exposition of the apparatus, and a specification of a proposed organized arrangement, with remarks on the necessity of a better security against fire.

Independently of this communication, I also submitted, at the same time, my plans to several individuals, whose stations in society, and the

* I have since ascertained, that by this, and other experiments, made by myself, for the extinguishment of fire by this means, a great prejudice and opposition have been excited, from the erroneous supposition that my object was to supersede fire-engines—an intention I entirely disclaim—my wish being to make the former an appendage, or auxiliary, to the latter, considering it an object of the greatest public interest, owing to its *readiness of application*, before the common fire-engines can be brought to act.

metropolis, would command respect. I likewise laid them before the directors and trustees of several of the Fire Insurance offices in London, disclaiming all personal advantage, being actuated by no other feeling than an anxious desire to prevent a calamity which so invariably involved many of the sufferers in distress, and too often in poverty.

PREVENTIVE FIRE POLICE.

An intimacy with the late Mr. Fielding (one of the Magistrates of Queen Square Police Office) led me to ask his opinion on the subject of the prevention of destructive fires in the metropolis, and other large and populous towns. The following is an extract of his opinion on this subject as delivered before a Committee of the House of Commons on the 6th of June, 1816:—

Question—“Has any plan ever suggested itself to your mind for establishing a better system of Preventive Police than at present exists?”

Answer—“My thoughts have been principally turned upon forming the most beneficial preventive, at once simple and most powerful, which I recommended to Mr. Perceval very shortly before his death: I likewise did so to a CAPTAIN MANBY, who has been much noticed for his exertions on this and other subjects, desiring him to make use of the idea, or avail himself of it as his own.

“My proposition was this:—There are upwards of fifteen Insurance Offices in London against fire. I suggested that if two firemen from every one of these Insurance Offices were to traverse up and down the streets of the metropolis every night, they would cross one another often and often. Let every man be provided with his axe and his link, or flambeau; then this would be such an effective means of security from fire, that the public would be much pleased with such an establishment. It would be equally beneficial to the offices themselves, for these men, upon the discovery of a fire, might proceed with their axes into the house where the accident occurred.”

On the appointment of a Committee of the House of Commons, in 1823, to take into consideration the improvement of the Police of the Metropolis, I expressed a wish to be examined before it; observing that the guarding against fire and the extinguishing of it, at its first breaking out, must be matter of great moment to the Police of the Metropolis; and that the plan I was ready to submit to them would,

I had no doubt, be adequate to effect such object: requesting, at the same time, the Chairman, now the Right Hon. Sir Robert Peel, to lay the following letter before the Committee, which favour he most kindly granted:—

“ Sir,—The public at large must be greatly interested in every circumstance that has for its object to lessen, if not prevent destructive fires. I am, therefore, respectfully induced to submit some observations and suggestions to avert a calamity that seldom occurs without considerable loss of property, often with the loss of life, and never without great inconvenience and distress to the suffering individuals. I must beg leave to observe, that the extinguishing of fires is at present exclusively in the hands of the different Insurance Companies, whose arrangements, as far as they extend, are unquestionably excellent, but certainly do not afford a sufficient protection to the public, as it is too well known that, notwithstanding the arrangements made by them—from not having the means immediately to oppose the flames—the fire often rapidly increases to such fury, that the firemen, upon a principle of safety, pull down the contiguous houses to prevent an extension of its ravages, rather than attempt to save that in which the flames first broke out.

“ It is obvious that every fire, whether detected at its commencement or when far and wide extended, must arise from small beginnings, and that every such fire, when discovered in an incipient stage, is easily extinguished, or certainly kept down, and thereby prevented from becoming extensive by an instant application of water, on the self-evident axiom, ‘ *That a small quantity of water, early supplied and well directed, will accomplish what probably no quantity could effect at a later period.*’

“ I have had the fact confirmed to me, that fires generally become destructive from the long period of time or interval that unavoidably occurs between the discovery or alarm given, and the assembling of the firemen, the arrival of the engines, the procuring of water, its full supply, and getting the engines into full and vigorous action. It is also a fact, that it sometimes proceeds to an almost boundless extent, from a scarcity or total want of water, as in severe frosts; and sometimes from breaking out in situations difficult of approach, and out of reach of the engines; thus rendering the common

means of extinguishment very difficult, if not altogether impossible of application ; and certainly not without considerable delay.

“ From the minutes of evidence, taken before a committee of the House of Commons, in 1816, on the state of the police of the metropolis, it is there shown, ‘ that sometimes it is nearly half an hour before the arrival of engines ;’—‘ sometimes a long space of time elapses before water can be found, or a sufficient supply obtained to effect an immediate extinction ;’—‘ that property, to the amount of upwards of 100,000*l.* is annually destroyed, as well as several lives lost, by fire in the metropolis ;’ and that ‘ half the serious and extensive fires are occasioned by *incendiaries*.’ The same minutes also set forth the following suggestions:—‘ that a FIRE POLICE would be the most effective security and provision against fire, and the accidents attendant thereon ; and if they were furnished with expedients, similar to the plan of CAPTAIN MANBY*, would be most successfully employed for saving lives and property, and beneficial in detecting and checking the numerous crimes that occur at fires.’

“ The adoption of a Fire Police, if furnished with fire-carts, and the necessary apparatus, would, by possessing these means of instant application, leave no doubt on my mind, that important benefits would accrue to all classes of the community. To the Insurance Companies it would often be an immense saving, by preventing the destruction of property insured at their offices. To the public it would afford a much greater security than they at present possess, and supply what they stand in need of; *viz.* a more efficacious protection to their lives and personal safety. It would also furnish a means for the preservation of papers, important documents, pictures, paintings, and property of such description as cannot be insured, and which no pecuniary remuneration could replace ; still further, from the promptness with which it may be used, and its ready application, it would materially serve to detect the crime of arson, and defeat the malignant attempt at revenge on the part of the incendiary.”

On the re-appointment of the Committee, in the following year, I was informed that its members were to meet solely for the purpose of drawing up the report of their proceedings during the former session.

* The expedients referred to are those detailed in pages 9 and 19.

On hearing this, my hopes ceased : I shall therefore now state the object contemplated by myself in wishing to be examined before a branch of the legislature. In this I was influenced by more than one reason : by submitting myself to the scrutiny of a public body, I was the more likely to draw public attention to the subject ; and as it is one which deeply interests every individual of the metropolis, as well as all who reside or have property in large and populous places, I deemed this the most effective step to arouse the feelings of all classes of the community to it.

The outline I am now going to offer will contain a summary of the evils and imperfections of the existing method, and the improved system which I had in view, as a remedy for that which is universally acknowledged as susceptible, at least, of amendment.

In bringing the subject then before the Committee, my design was to class my observations under the two following heads, *viz.*

THE PREVENTION OF DESTRUCTIVE FIRES, AND THE RESCUING OF PERSONS FROM HOUSES IN FLAMES.

It was my intention to have pointed out, that the general arrangements, respecting the extinction of fire, were exclusively in the hands of the different Fire-offices, with the exception of the parochial establishments; settled by acts of parliament ; and that the only protection afforded to the public, by both or either, was by the fire-engines. I should, as my first object, have called the attention of the Committee to the fact, “ that fires generally make great progress, and often become very destructive, from the interval that unavoidably occurs between the first alarm, and that of the engines getting into full action ; sometimes from breaking out in situations difficult of access, and their not being discovered in an incipient state, as when they commence in the cellars of large warehouses, public buildings, &c.”

I should have stated, what had fallen under my own experience at Edinburgh, that it often happens that we cannot get sufficiently near to the part to be able to project that quantity of water which, in the earlier stage of the fire, would prove sufficient for the entire extinction of it, even though such water might be brought by hand. In such case, it is evident, that if we bring into action but a small quantity, we should, doubtless, succeed, either in subduing the fire, or in arresting its progress, until larger supplies were brought into action ; and here it is not necessary to proceed with my recapitulation in support

of the truth of these statements, the Committee of the House of Commons of 1816 having said all, and more than I deem requisite, to confirm the inefficiency of the mode now in use.

I had indeed further intended to lay before the Committee an authenticated list of extensively destructive fires; distinguishing such as were known to have become so from the want of some more efficient and prompt counteraction to the extension of fire, than the present system by engines only can possibly admit of; and then to submit, whether the public have not a fair right to expect, and a just claim to demand, from the Fire-offices, a better security against the distresses consequent on fires, than is at present afforded to them.

I should then have submitted my plan, by Fire-carts, for furthering such desirable objects, illustrating the same by models, confirming their utility by their instant application, showing how a continued stream of water can be projected in any given or precise direction, the distance such a stream could be propelled by the elastic force of condensed air; and, lastly, the extinguishing properties of the solution or fluid proposed to be substituted for common water.

I should also have exhibited the models and plan for a CAR, conveying APPARATUS for the rescue of persons in danger, with its accompanying RESERVOIR (requiring only the power of one man to move it from place to place), containing a further supply of water properly impregnated with the antiphlogistic matter recommended, with a portable hand-engine, possessing great power of projecting the solution, and, from its make, capable of speedy adjustment.

In proof of the advantage that would be derived from the use of the FIRE-CARTS, occupying the interval of time before spoken of, I should have detailed the following experiment made by myself, some few years since:—Having selected twelve experienced and active men, I arranged them at the Barrack Fire Engine, ready to start for a certain spot selected by myself beforehand, where water was ready for the use of the engine. By the side of the engine I placed a Fire-cart, containing six vessels already charged with the solution, under the charge and conveyance of only one man. Both parties started at one and the same time; the distance of the spot I had fixed upon was 125 yards. Though the fire-engine required only to have its suction-pipe attached for immediately obtaining water, yet it could not be got into action for upwards of eighteen minutes from the time of starting, and even then could not act upon the part of the

building supposed to be in flames, from its *height, intricacy, and difficulty of approach.*

The person, however, in charge of the Fire-cart was seen by numerous persons on the top of the lofty-building, actually applying the contents of one of his vessels from the cart, in less than *two* minutes from the time of his starting.

It should, however, be remembered that this experiment took place during day, with the men all arranged at the drag-ropes in readiness for starting; whereas, in actual service—particularly in the dead of night—the usual circumstances and consequent delay for the men assembling, would have very much increased this space of time, as the arrival of a single watchman would be all that is required for the conveyance and application of one Fire-cart and apparatus in opposing the progress of the fire.

I should then have expressed my opinion on the utility and high importance of a regularly-established FIRE POLICE, and that such be a constituted branch of the general Police, subordinate to them, but available of the aid of each other. By this regulation all jealous feeling would be obviated, while every benefit would result from their mutual co-operation and assistance: for, surely, in cases where human life or extensive property is at stake, feelings of jealousy ought never to be found. An arrangement of this kind would, I feel fully persuaded, tend to the prevention of crime, since it is a fact well ascertained that out of the first thirty persons who assemble at fires in the metropolis, *twenty* are there collected for the exclusive purpose of plunder, and for throwing impediments in the way of early extinction.

In the hands of such a regularly-embodied Fire-Police as I have been speaking of, the Fire-carts and apparatus, considered as an appendage to the regular Fire-engines, would, if so intrusted to their management and application, “eminently tend,” in the words of the late Mr. Fielding, “to be such an effective means of security from fire, that the public would be highly pleased with such an establishment.”

It was my intention also to have submitted an estimate of the expense for furnishing the necessary quantity of Fire-carts requisite for the better protection of the Metropolis, viz., 200 at £25 each, which would amount to £5000; but, perhaps, for such a number a contract might be made at £20 each. The number of Reservoir Cars required, namely, 100, with their appendages, at £30 each, would amount to £3000. With

such a number of Fire-carts and Fire-cars, placed under the immediate superintendence of a well-organized Police, in conjunction with the regular Fire-engines, would close my ideas for the PREVENTION OF FIRE, and the RESCUING OF PERSONS FROM HOUSES IN FLAMES.

Nor can it be too often repeated that there exists, at present, no organized system for rescuing persons from a house on fire,—a situation horrible and agonizing both to the victim and to those who are at present sometimes compelled to be merely passive spectators. In furtherance, then, of the cause of humanity, I should, lastly, have laid before the Committee the number of persons who had of late been burnt to death in houses on fire; distinguishing those who had perished from the want of some portable apparatus, simple in construction, of ready adjustment, and quick application, and which, when promptly brought to the spot and properly used, might either have effected their immediate rescue, or have afforded certain other means of escape. For this purpose there was to be employed the light Car already mentioned, with a complete set of apparatus adapted to different situations, the whole of which is susceptible of easy management, as already described—the cart and car to be placed in the charge of the FIRE-POLICE, who are to be instructed in their uses. For this purpose I should have recommended a code of directions to be drawn up and generally distributed for public instruction, so that persons who might be so unfortunately situated as to have no other means of escaping, might be instructed in the manner how to act in securing the apparatus to the window frame, &c. by which to descend, or obtain that assistance necessary to save the lives of those whose mental fortitude might not be equal to the undertaking, or who, from sickness and infirmity, were rendered unable to provide for their own safety,—proposing head-money for every person so rescued.

I should also have pointed out that in the metropolis the loss of lives from fire is on an average upwards of *twenty* annually; many of these sufferers would most undoubtedly have been saved, by some simple apparatus, such as I have pointed out.

I acknowledge that the preventive and remedial means already employed by the Fire Insurance Companies are good (as I have before said) so far as they extend; but it is within every one's experience, that these means are practically and painfully deficient for the more enlarged view which I have ventured to take of the matter. But it may be

asked—Is it right to expect that so laudable an object should be made to devolve on the limited means of a few individuals?—No ; certainly,—the whole plan is so comprehensive, so beneficent, and humane, that it can only be accomplished as a measure of Government, or by the establishment of a company chartered by Parliament,—though I am persuaded it would be rendered much more effective in the hands of Government *as an appendage to, and under the management of the New Police* ; and when I state that the whole which I propose can be effected at an expense not exceeding £8000, it is my earnest hope that, on the score of humanity, and as a wise municipal arrangement, it may not be thought undeserving of encouragement.

Should I, however, not succeed in the quarter most concerned in its adoption, I should then endeavour to effect my purpose by the establishment of a Company by shares of £100 each, and to request the Secretary of State for the Home Department to become its patron, soliciting him to allow the assistance of that very effective power, the New Police, in all cases of necessity. Thus established, I should propose to place the whole and entire management of its funds in the hands of a Committee, from a confidence that, if conducted by gentlemen of weight and respectability, it would make a profitable return to the shareholders, if such were their object ; for by preventing the destruction and the devastation of property, it would become in consequence entitled to the estimated salvage of the property thus saved.—Lastly, I would readily not only become a subscriber to the fullest extent of my means, but give my services in the direction of everything the subscribers might consider expedient.

DETAILED DESCRIPTION OF THE APPARATUS.

In a preceding page I have only mentioned the apparatus in its immediate application ; I will here enter on a fuller development of it. In its construction my principal design has been simplicity, in form, size, and use ; so as to be moved with little assistance to the spot required, and when there, capable of instant application, and at the least possible expense. Appended beneath the axle-tree of the car (a situation the best adapted for moving with ease and care a weight, by the centre gravity) is a double Reservoir, containing the antiphlogistic fluid, which, being projected with considerable force from

a hand-engine, is capable of extinguishing a large and extensive surface of inflamed material. The Hand-Engine is so constructed as to be capable of speedy adjustment, and put into operation in a very short time ; it is accompanied with fire-buckets for conveying, and a tank from which to project, the fluid in the direction required.

The further contents of the Car are, first, a square Safety-sheet for catching such persons who, to save their lives, are driven to the alternative of leaping from the parapet or windows. It is formed of elastic girthing (such as is used for saddles), and surrounded by a rope, in the manner of a bolt-rope to a ship's sail, and thus contrived for the purpose of being extended by the people in the street. This will most assuredly catch them without injury or danger, if due attention is paid by the people below ; eight individuals being sufficient to give the sheet the necessary degree of extension.

The next Safety-sheet is made of material like the first, but differs from it in make, being of a parallelogrammic form ; a shape better suited than the former, being capable of adjustment to any distance of windows, where there is an area between the inner railing and the house.

The method of using it is as follows :—At the corners of the street are loops for hooks, which are to be secured to the inside of the window frames, an operation easily effected by means of a folding ladder, made to rest on the iron railing, and the outside sill of the window, thus forming a platform for the fireman to pass over, while, with his axe, he dashes in the corner of the window or shutter, and hooks one corner of the sheet to the inside of the window under the one (in a perpendicular line) to that where the persons are requiring assistance ; he will do the same at the window similarly situated. The side of the sheet next to the street must be extended by the people, who must guard against any injury accruing from the spikes of the railing, by giving that part of the sheet sufficient elevation ; and to give confidence to the distressed objects, and remove the dread of falling into the area, it is desirable to incline or cover that part of the sheet with a blanket, or such other material. Valuable and much perishable property, that would be destroyed by being thrown into the street, might be saved and preserved whole by this means.

But should the unfortunate inmates of the house not dare to trust to this mode of preservation, I propose effecting their descent by a communication similar to the means resorted to for preserving lives from

shipwreck, by projecting a line over the building from a short hand-gun of large calibre; by this communication a line may be guided by the people below to those requiring assistance, by which they may haul up a rope-ladder, and hook it to the window-frame, parapet, or battlement top. By this means any active person may ascend to afford the requisite assistance, or such as have sufficient self-possession and strength may descend by it. This, however, is not the only way by which their descent may be rendered safe; for, by such a communication being established, another description of apparatus may be adjusted to the window-frame, worked in a similar manner to that employed for bringing shipwrecked mariners from a stranded vessel; and particularly adapted where there are women, children, sick, or infirm.

COMPOSITION OF THE ANTIPHLOGISTIC FLUID.

I shall now offer a few remarks respecting common water in the extinguishing of fire, as it is at present the only resource in use for such purpose, and cannot be considered as an efficacious expedient, unless there is a powerful supply. It is well known, that when a small quantity of simple water is cast on materials in a state of violent combustion, the heat from the burnt surface soon causes it to evaporate into steam, and the materials thus extinguished, again becoming dry, from the radiation of surrounding heat, readily ignite. Hence the necessity of an incombustible substance to render water more effectually extinguishing, and to prevent materials once extinguished by it from rekindling.

This subject, during the last century, has engaged the experimental inquiry of many distinguished men of talent in different countries.

The addition of common pearl-ash, or the potash of commerce, to water, renders that fluid capable of extinguishing fire very efficaciously: indeed, such is its power, that it will instantly extinguish the flames, nor will the part where it wets re-ignite, or rather re-inflame; for, as the water evaporates, a solid incrustation of the pearl-ash is left on the surface, which, by defending it from the influence of the air, prevents it from burning and from communicating flame to the contiguous parts. Water thus impregnated constitutes what may be called an *Antiphlogistic Fluid*, and is by many times more effectually

extinguishing than common water. This was confirmed by a public experiment at Stockholm in 1792. The solution used was made by several combined ingredients, and subdued an artificial fire by two men and forty measures of the prepared solution, which would have required twenty men and 1500 of the same measures of common water. But these means appear to have been designed entirely for being cast upon the flames by hand. No attempt, however, has ever been made to apply such a solution by a projecting force on flames,—a consideration most important where the situation and fury of the flames prevent approach.

The simple solution of pearl-ash is the one which I have used, and I consider it the best, as it never fails in extinguishing active conflagration. Thus, for instance, let us suppose a large double-bedded room, and one of the beds on fire: if a stream of the solution is directed on the curtains of the one in flames, wherever it touches, that same material, even though it again become dry by the evaporation of the water, will *not re-inflame*. It will certainly take fire, but it will only smoulder like tinder, as any one may illustrate by direct experiment. Thus, at a moderate ratio, by increasing the quality, the Cart would convey an extinguishing fluid equal to a ton of common water.

As a demonstrative proof of the efficacy of my Antiphlogistic Fluid, I illustrated at a lecture its extinguishing properties by direct experiment. On the one hand I showed its power of extinguishing flames,—on the other its property of rendering the material, otherwise highly combustible, incapable of burning with flame; and, finally, I contrasted it with the effect of common water, in each and all of the above instances. For this purpose I exhibited its effects on the most combustible materials to be found, as those in dock-yards, viz., hemp, oakum, cordage, and deal wood; and afterwards, with a view of diminishing the numerous fatal calamities that have so often befallen females from the structure of their dress, and the inflammable materials of which they are composed—as calico, muslin, gauze, linen, &c.—of each of these I exhibited a specimen,—the one impregnated with, or dipped into the solution, and afterwards dried, the other in common water. By applying fire to each of these, there was at once manifested the value of such an agent in extinguishing fire, and with what advantage a small quantity of such fluid might be used, and how capable so small a quantity would be of subduing even extensive fires when water, from frost and other circumstances, could not be procured.

I HAVE thus briefly shown the practicability of what I propose by the test of demonstration, in the experiment at Woolwich in the Practice-ground, and that with the Barrack-engine. If the remedial division of my arrangement be thus efficient, the next question would be,—What is the best mode of putting it into active operation?—No doubt, surely, can be entertained that a well-organized body of FIRE-POLICE, duly trained, and exclusively occupied in making the circuit of our vast Metropolis, crossing and re-crossing every ramification of its streets, and acting according to a fixed, well-digested code of Regulations, would be the means of stilling many an anxious thought at the period of retiring to rest, and, in case of alarm, by being always at hand, or within immediate call, might prevent much mischief, and defeat the dark-laid schemes of the incendiary. A complete set of Apparatus could be deposited at a Station-house, the whole under the charge of one man, who would render assistance at a moment's notice, and thus, by promptitude of application, many a sacred and public edifice, together with documents of great importance, might be rescued from destruction. By way of illustration, suppose an establishment of my plan had existed at York,—that rich and ancient structure, the Minster, would have been saved from the premeditated scheme of the maniac Martin; or, at least, so prompt would have been the remedy, that the damage might have been considerably diminished. Still nearer home, let us call to mind what befel another noble, antique building—Westminster Abbey. The fire that happened in this case was accidental, but much injury to that venerable pile might have been obviated by the timely aid of a Preventive Fire Police. Again, in the occurrence at the Custom-house, who can estimate the benefits that might have accrued from the co-operation of a practised and skilful Police in securing the official papers which there fell a sacrifice to the flames,—documents which can never be replaced? I throw out these hints on the broad ground of public and private utility; and when well weighed, I feel confident they will meet with the appreciation due to their intrinsic value. In an extensive mercantile city like London, where property and goods of every description are necessarily left without an adequate safeguard, who can calculate on their security,

either from accident or design? And in these times of peril from incendiaries, it would seem to be the part of common prudence to adopt any measure that has for its object individual and public protection. The plan of a **PREVENTIVE FIRE POLICE**, which I have thus ventured to suggest, would, to Government, be the means of preserving from conflagration buildings and papers of incalculable national importance—to the Fire-offices it would counteract fraud in cases of wilful arson, by discovery and prompt extinction—to individuals it would afford a mode of rescuing from destruction that species of property which is now rejected by the offices, tranquillizing the minds of the inhabitants in the alarm of midnight, and by its ready expedients mitigate the horrors of the greatest of all human calamities—to the poor generally, and to mechanics, to all such as are unable to insure their furniture and tools, it would be a precaution of mercy, preventing much distress and confusion from fire in contiguous or neighbouring houses;—and, lastly, to factories, workshops, and stables, the advantages of a recognized body of **FIRE POLICE**, ready at an instant to render assistance, must, I think, be too apparent to need a single word to recommend it.

THE END.



